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JAPANESE TRADE STUDIES

Special Industry Analysis
No. 17

DYES

Prepared for the
Foreign Economic Administration
by
Paul M. Gottfried
A member of the Staff of the
United States Tariff Commission

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FOREWORD

This is one of a series of Special Industry Analyses discussing from a commodity or individual industry viewpoint the outstanding items entering into the trade of Japan proper with its Empire and with foreign countries. These analyses are a part of a larger project which includes compilations (annotated) of the imports and exports of Japan proper by sources and destinations; surveys of certain of the colonial areas, emphasizing their Empire and foreign trade and post-war problems relating thereto; an over-all study of the trade of Japan proper; and a survey of Japan's shipbuilding industry and shipping services and requirements in the pre-war period. In all of the studies Manchuria has been included as an Empire area owing to the political, economic, and military dominance of Japan in that area, especially during the last decade.

Most of the data in these analyses were taken from official and semi-official Japanese sources. Not only have errors and inconsistencies frequently been detected within individual volumes, but many data from different sources supposedly reporting on the same subject are irreconcilable. It is very likely that large shipments of goods reportedly moving to Kwantung from Japan have been in large part merely transshipments destined for Manchuria.

The present report is one of a number which were prepared during 1944 and 1945 for the Foreign Economic Administration by members of the staff of the United States Tariff Commission. Owing to the desire of the Foreign Economic Administration to obtain this material as promptly as possible, the reports were not reviewed by the Tariff Commission. All statements of fact or opinion in these reports are attributable to the individual staff members who prepared them. The reports were originally intended for the confidential use of government agencies, but are now being made public with the consent of the Foreign Economic Administration.

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DYES

Introduction and summary.

The dye industry of Japan in the pre-war period accounted for about one-quarter of 1 percent of the value of the entire Japanese industrial output. Exports of dyes ordinarily constituted about one-half of 1 percent by value of all Japanese exports; imports of dyes ordinarily constituted about one-quarter of 1 percent of all Japanese imports.

In the pre-war period, Japan was the fourth or fifth ^{1/} largest dye-producing country of the world, being exceeded only by Germany, the United States, and the United Kingdom. It should be noted that there are many different types of textile dyes with prices ranging from about 10 cents per pound for some of the more easily produced sulfur colors to about \$3 per pound for some of the more complex vat dyes. It is therefore difficult to make meaningful comparisons of the total value of production in different countries unless such comparison is restricted to one particular dye or class of dyes. The proportionately large production of low-priced bulk dyes, such as indigo and the sulfur colors, characterized the Japanese dye industry; consequently, the average unit value of Japanese dye production was the lowest of any dye-producing country of the world. The unit value of Japanese domestically produced dyes was normally about 20 cents per pound, compared with a unit value of about \$1 and about 70 cents for the domestic production of Germany and the United States, respectively.

Before the war, significant export trade, in dyes was confined to most of the major industrial countries of the world—Germany, Switzerland, the United Kingdom, France, the United States, and Japan—named in order of importance by value of the respective dye production of each country. The Japanese dye industry expanded tremendously after 1932, and by 1938 Japan was the world's second largest exporter of dyes, measured in terms of quantity; Japan was the sixth largest exporter, measured in terms of value. Table 1 shows the relative position of Japan in the world trade in dyes in 1938.

Table 1.— Coal-tar dyes: World exports, by specified countries, 1938

Country	Quantity		Value		Unit value
	: 1,000 pounds	: Percent of total	: 1,000 dollars	: Percent of total	
Germany —————	60,638	48.2	43,825	52.6	0.72
Switzerland —————	14,586	11.6	18,973	22.8	1.29
United Kingdom ————	8,919	7.1	5,547	6.7	.62
France —————	9,489	7.5	5,052	6.1	.53
United States ————	8,576	6.8	3,825	4.6	.45
Japan ^{1/} —————	14,880	11.8	2,210	2.7	.15
All other —————	8,740	7.0	3,693	4.5	.42
Total —————	125,828	100.0	83,125	100.0	.66

^{1/} Does not include exports to Korea and Formosa, which are shown in table 5.

Source: Official trade returns of the exporting countries.

^{1/} It is not definitely known whether the 1940 production of Japan was greater or less than that of the Soviet Union.

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Organization and operation.

In 1939, there were about 60 dye-manufacturing plants in Japan proper, with a combined output of approximately 63 million pounds. The five leading companies produced about 90 percent of the entire Japanese output; the remaining companies generally operated on a small scale. Almost all of Japan's dye production is confined to the islands of Honshu and Kyushu. The five main dye producers are:

Nippon Senryo Seizo K. K. ^{1/} (Japan Dyestuffs Manufacturing Co., Ltd.)
 Muke Senryo Kaisha. (an operating division of the Mitsui Mining Co.)
 Teikoku Senryo Seizo K. K. (Imperial Dye Manufacturing Co., Ltd.)
 Nippon Kasei K. K. (Japan Synthetic Chemical Manufacturing Co., a
 Mitsubishi subsidiary)
 Hodogaya Soda K. K.

Nippon Senryo Seizo K. K. is the oldest and foremost dye manufacturer in Japan. The main plant, located in Osaka (on Honshu Island) is reliably stated to have produced about 75 percent of the total Japanese dye production in 1939 and is estimated to have normally employed about 13,000 workers. This plant is well-integrated, producing its own crudes, intermediates, and acids.

The second largest producer, the Muke Senryo Kaisha, is directly owned and operated by the Mitsui Mining Company, a branch of the House of Mitsui, the foremost banking dynasty in Japan. The dye and intermediate works of this company, located in Omuta (on Kyushu Island), employed over 5,000 workers in 1938.

The plant of the Teikoku Senryo Seizo K. K. is located at Fukuyama (on Honshu); that of Nippon Kasei K. K. is located in Osaka, and that of the Hodogaya Soda K. K. in Yokohama (on Honshu). The remaining 55 odd dye facilities are small plants which are widely distributed from Tokyo to the southern portion of Kyushu.

It should be noted that the plants mentioned are engaged primarily in the manufacture of finished dyes. Most of the larger plants also produce intermediates which, besides being used for dyes, are also used for the production of synthetic medicinals, synthetic flavors and perfume materials, synthetic plastics and resins, rubber-compounding chemicals, photographic chemicals, explosives, and chemical warfare gases. Any plans for the control of the Japanese dye industry must of necessity include the control of plants making the corresponding intermediates.

Summary of production, imports, exports, and apparent consumption.

In terms of quantity, production of dyes in Japan more than doubled from 21.7 million pounds in 1928-32 to 43.8 million pounds in 1933-37. By 1939 production had reached 62.8 million pounds. The increase in the

^{1/} K. K. is an abbreviation for Kabushiki Kaisha which denotes a limited stock corporation.

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Until 1938, the largest quantities of Japanese dye imports came from Germany. Switzerland and the United States ranked second and third, respectively, and suppliers of these imports. The unit values of the dyes imported into Japan in 1938 were as follows: From Germany, 5.1632 yen; from Switzerland, 6.2856 yen; from the United States, 2.0865 yen; and from France, .9934 yen. These unit values compared with a unit value of less than 1 yen for all dyes produced in Japan. The imports were confined chiefly to the fast color azoic, anthraquinone vat, mordant and acid mordant, and direct dyes. Imports from Japanese Empire areas were insignificant and were limited to the vegetable dyes such as logwood extract, natural indigo, and tumeric.

In 1938, Japanese imports practically ceased, dropping off 80 percent from the imports in 1937. This drop was due chiefly to the initiation of strict control of foreign exchange, and the levying of a virtual embargo on dye imports unless the importer could show that the dyes to be imported were absolutely essential, and that no satisfactory substitutes were available from Japanese manufacturers. This Government action was in line with a policy aimed at increasing Japan's self-sufficiency in all types of dyes. It is believed that the attempt was unavailing and that the war has seriously reduced Japan's supplies of the higher priced dyes that were formerly imported. It is probably true, however, that Japanese requirements for such dyes have substantially decreased since the war because of a probable sharp drop in exports of high-quality finished textiles for which most of the imported dyes were needed.

Dye exports occupied an important position in the economy of the countries that supplied the major portion of Japanese dye imports. Germany was the world's largest dye producer and exporter; Switzerland generally exported as much as 90 percent of its entire dye production. The dye export trade of the United States was, relatively speaking, undeveloped; such exports amounted to only about 13 percent of total United States production of dyes for the three years preceding the outbreak of the war.

Exports.

The balance of Japan's dye trade is, by quantity, predominantly in favor of exports; the reverse is true as far as value is concerned. This is explained by the fact that the bulk of Japanese exports consist of the low-priced sulfur colors, while Japanese imports are confined chiefly to the high-quality, high-priced dyes that are not produced by its industry. The low-priced sulfur dyes (average unit value about $\frac{1}{2}$ yen per pound compared with imports with an average unit value of over 5 yen per pound) such as sulfur black and sulfur blue together represented about 60 percent of all Japanese exports of dyes. China, the leased territory of Kwantung, Manchuria, and Korea were Japan's chief markets and together received about 90 percent of Japanese dye exports in recent years. These markets (of which China is the largest) are very dependent on the types of dyes that were imported from Japan, generally requiring large quantities of the sulfur colors. Japan has enjoyed the position of dominant supplier in the area chiefly because of large domestic supplies of sulfur, and large domestic

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production of sulfur colors, proximity to markets, and currency-exchange advantages in the yen block area. With these advantages Japanese dye producers have coordinated their export activities and have waged vigorous price wars with other major dye-producing countries. The position of Germany and other suppliers has been progressively weakened in the far-eastern area, and after the outbreak of the European war Japan was practically the only exporter to these countries. (See table 5.)

Total exports of dyes from Japan rose from 15,170,000 pounds in 1933 to 31,808,000 pounds in 1939. They dropped sharply to 9,568,000 pounds for the first 9 months of 1940. This sharp drop was chiefly due to the government restriction of exports to other than yen-bloc countries in order to conserve Japanese dye supplies in the face of unsettled world conditions.

Consumption.

In terms of quantity, the apparent annual consumption of dyes in Japan proper increased from 24 million pounds in 1933 to about 46 million pounds in 1938. It fell off sharply to about 32 million pounds in 1939. The high apparent consumption of 1938 was probably due to the dyeing of military uniforms.

Table 5. - Dyes: Exports (domestic produce) from Japan proper and Karafuto, by principal markets, averages, 1928-32 and 1933-37, and, in specified years, 1933 to 1939^{1/}

Country	Average, :1928-32:	1933	1935	1937	Average, :1933-37:	1938	1939 ^{1/}
Quantity (1,000 pounds)							
China	4,217	10,068	14,517	4,700	9,591	6,151	
Kwan'ung	258	1,065	1,288	3,126	1,818	3,530	
Manciuria	83	1,248	1,687	2,718	1,791	4,315	
Korea	997	1,682	2,632	2,868	2,335	3,732	2,668
Formosa	25	4	8	5	7	2/	3/
British India	36	870	1,292	1,129	1,158	387	
Netherlands	-	-	54	279	105	86	
Netherlands Indies	10	20	58	268	87	80	
Belgo-Luxemburg	2/	-	23	438	176	157	
Mexico	-	-	52	112	51	62	
All other	68	213	612	667	442	112	
Total	5,694	15,170	22,223	16,310	17,561	18,612	31,808
Value (1,000 yen)							
China	646	1,905	4,677	2,270	2,932	3,090	
Kwantung	51	233	366	913	482	1,899	
Manciuria	26	231	338	618	371	1,791	
Korea	492	897	1,173	1,029	1,002	1,605	2,134
Formosa	47	7	21	14	16	5	3/
British India	25	470	996	1,027	836	427	
Netherlands	-	-	75	192	69	137	
Netherlands Indies	1	5	119	291	109	117	
Belgo-Luxemburg	2/	-	19	224	94	109	
Mexico	-	-	98	145	72	73	
All other	12	52	617	589	379	125	
Total	1,300	3,800	8,499	7,312	6,362	9,378	20,666

^{1/} Country detail not available. ^{2/} Less than 500. ^{3/} Not available.

Source: Compiled from official annual and monthly statistics of Japan, Formosa, and Korea.